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COUNTRY ANALYSIS BRIEFS

Central Asia

Last Updated: September 2005

Background

Central Asia has large reserves of natural gas but its development as a major natural gas exporter is constrained because of a lack of pipeline infrastructure.

Central Asia is loosely defined as including the countries of Turkmenistan, Uzbekistan, Tajikistan, Kyrgyzstan, Kazakhstan, and Afghanistan. The energy sectors of Turkmenistan and Uzbekistan are covered briefly in the Caspian Sea Region Brief, but this page is being provided to discuss these two countries' growing energy sectors in greater detail.

Turkmenistan and Uzbekistan sit on large reserves of oil and natural gas reserves yet both countries face challenges in getting those reserves to world markets. Neither country prefers to export their resources through Russian-controlled pipelines, and so each must seek to obtain capital and political support for pipelines either through Iran or through Turkey. All of the countries of Central Asia have centralized government planning systems that have placed strong and sometimes repressive leaders at their helms. The economic development of these countries, and in turn their energy sector development, depends largely on the countries' level of market transparency and their governments' stability. Please consult the U.S. Department of State (and the links below) for more information on the political and economic situations of Turkmenistan and Uzbekistan.

Oil

Central Asia has large reserves of natural gas but its development as a major natural gas exporter is constrained because of a lack of pipeline infrastructure. For more information on Kazakhstan, please see the Kazakhstan Country Analysis Brief.

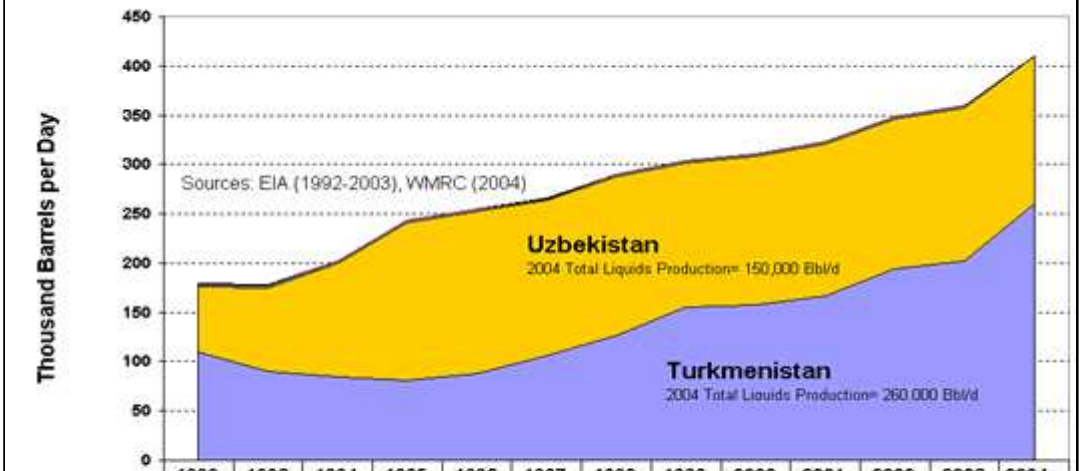
Turkmenistan's Oil Sector

Turkmenistan has proven oil reserves of roughly 546 million barrels (*Oil and Gas Journal)*, although some reports claim oil reserves of as high as 1.7 billion barrels. Most of the country's oilfields are situated in the South Caspian Basin in the west of the country. Turkmenistan has experienced significant oil production growth since it obtained independence from the USSR, more than doubling from 110,000 bbl/d in 1992 to approximately 260,000 bbl/d in 2004. The government has frequently targeted higher oil production, but the oil sector struggles to meet its growth goals due to lagging foreign investment. Foreign investment is limited to joint-ventures (JV) and production-sharing agreements (PSAs), and Turkmen officials hope to attract $500 million in oil-sector investment this year. President Saparmurat Niyazov (also referred to as Turkmenbashi) hopes to boost Turkmen oil extraction to 2 million bbl/d by 2020. In the meantime, even though Turkmenistan exported approximately 170,000 bbl/d in 2004, it is the most oil intensive country in the world. It consumes over nine times as much oil per unit of GDP as the average country.

Slow-paced political and economic reforms have made the majority of the international energy

companies that entered the country withdraw their investments. The May 2005 dismissal of Deputy Prime Minister Ella Gurbanmuradov, who had served for eight years as the country's top energy official, for embezzling $60 million also did not help the business climate. The select few companies that remained have been successful in developing the Turkmen portion of the Caspian shoreline. Dragon Oil (UAE), Burren Energy (UK), and Petronas (Malaysia) have posted encouraging upstream results by boosting production levels at various fields, and Petronas expects to begin production at Makhtumkuli-3A by the end of 2005. Foreign Direct Investment (FDI) levels are actually rising, and include more well-known players such as Maersk Oil (Denmark) and Buried Hill Energy (Canada). Recent meetings between President Niyazov and Lukoil's Vagit Alekperov may pave the way for more company investment in Turkmenistan's sector of the Caspian Sea. However, many of the prime oil deposits are located in disputed areas of the Sea, and without an agreement between Iran, Azerbaijan, and Turkmenistan on maritime borders, these fields will remain undeveloped. Turkmenistan's dispute with Azerbaijan over the Serdar/Kyapaz field in the Southern Caspian is one example of how the lack of agreement on maritime borders has kept the field from being developed.

Fig. 1: Oil Production in Central Asia (1992-2004)



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004e
Tajikistan	1.3	0.8	0.6	0.7	0.6	0.6	0.5	0.5	0.4	0.3	0.3	0.4	
Kyrgzstan	2.3	2.0	1.6	2.0	2.0	1.8	1.7	1.6	2.0	2.0	2.0	2.0	
Uzbekistan	65.5	85.0	115.0	160.0	164.7	157.4	161.0	147.0	151.3	154.0	152.0	155.0	150.0
Turkmenistan	110.0	90.0	85.0	81.0	87.8	106.0	127.0	155.0	157.2	167.0	194.2	202.4	260.0

Uzbekistan's Oil Sector

The Oil and Gas Journal estimates that Uzbekistan contains 594 million barrels of proven oil reserves, with 171 discovered oil and natural gas fields in the country. The majority of the known oil fields in Uzbekistan are found in the Bukhara-Khiva region, including the Kokdumalak field, which accounts for about 70 percent of the country's oil production. The country also has oilfields in the Fergana valley region, the Ustyurt plateau, and the Aral Sea. Australia's Santos Ltd. and Caspian Oil and Gas Ltd. announced plans in August 2005 to explore 58 fields in the Fergana Basin that, according to the companies, have discovered reserves of 1.2 billion barrels and 5.5 Tcf of natural gas.

According to Interfax, Uzbekistani total liquids production during the first six months of 2005 decreased more than 15 percent in comparison to production levels during the same period in 2004. During 2004, total liquids production in Uzbekistan averaged 150,000 bbl/d, of which roughly 50 percent was crude oil.

After consistent oil production declines since 1998, Uzbekistan has made agreements with foreign oil companies, especially ones from China, to develop small oil fields. In July 2005, Sinopec signed a $106 million investment deal to rehabilitate existing oilfields with Uzbekneftegaz. In June 2005, CNPC agreed to form a JV with Uzbekneftegaz, the state oil and gas holding company, to develop oilfields in the Bukhara and Khiva regions. Combined, these oilfields will produce only about 20,000 bbl/d of oil and not until 2015. Petronas, a Malaysian company, announced plans to sign a $200 million JV with Uzbekneftegaz, to develop hydrocarbon resources in the Aral Sea. The JV agreement could be signed as early as 2006.

Uzbekistan is attempting to privatize Uzbekneftegaz but its desire to maintain holding control over the company may thwart its plans to attract foreign investors. Also the Uzbek government's pledge to increase tax levels by roughly 30 percent, year-over year, on subsoil hydrocarbon production for 2005

is hindering foreign investment.

Downstream/Refining

Uzbekistan has three refineries, at Fergana, Alty-Arik, and Bukhara, with a total refining capacity of 222,000 bbl/d. The Bukhara refinery, which was the first refinery built in the Commonwealth of Independent States since the breakup of the Soviet Union and cost in excess of $400 million, currently has a capacity of 50,000 bbl/d, although it is expected to expand to 100,000 bbl/d and refine both crude oil and gas condensate. Due to the country's decline in oil production in recent years, Uzbek refineries are operating well below their rated capacity. Uzbekistan also imported about 82,000 bbl/d of crude oil and 6,000 bbl/d from Russia in 2004 to satisfy the requirements of its refineries. Uzbekistan's limited refined product exports move by rail and road to neighboring countries and to export ports on the Black Sea.

Turkmenistan has two refineries, the Chardzhou and Turkmenbashi, which in total provide nearly 240,000 bbl/d of crude oil refinery capacity. Turkmenistan's refinery system is also underutilized and only processed 137,000 bbl/d of oil from Jan-May 2005, a 1 percent increase from the same time period in the previous year. According to Turkmen officials, refinery throughput dropped because of work to the Turkmenbashi refinery.

Regional Oil Transport

Export options for Turkmenistan and Uzbekistan, which is doubly landlocked, are more limited. Turkmenistan has no oil pipelines, meaning that all the crude oil exported from Turkmenistan is shipped by sea. Even after shipping its oil by tanker to Russia's Caspian Sea port of Makhachkala, however, securing pipeline access has been a problem for Turkmenistan. Turkmenistan exported approximately 60,000 bbl/d of crude oil and condensates in 2004, down from 75,000 bbl/d in the autumn of 2002, and imported roughly 20,000 bbl/d of crude oil from Russia.

A negligible amount of Turkmen oil product exports move to the north-eastern Iranian market, shipped from the Turkmenbashi refinery to the Iranian port of Neka. The oil swaps began in July 1998. Dragon Oil (UAE) has exported some of its crude oil production through a swap deal with Iran since 1998, and in April 2000 the company signed a new 10-year swap agreement with Iran. Under this agreement, Dragon Oil (Ireland) transfers its crude oil at Hazar, Turkmenistan and ships it to the Caspian port of Neka, in northern Iran. Dragon then receives an equal swap volume of Iranian crude oil from Kharg Island, in southern Iran, for marketing to international third parties. Since December 2001, a second crude marketing route has been established through Baku, Azerbaijan and a third route through the port of Makhachkala in Russia on the basis of transportation tenders. Despite U.S. resistance, Iran continues to project itself as the most viable outlet for Central Asian oil and natural gas exports. Iran claims that up to 1.5 million bbl/d of crude oil from Central Asia and the Caucasus could be exported through swap deals with the state-owned National Iranian Oil Co. (NIOC) and through a newly expanded pipeline from Neka to Tehran.

Uzbekistan has virtually no international oil pipeline infrastructure except for a pipeline linking the Kazakhstani Shymkent refinery to the Chardzhou refinery in northeastern Turkmenistan. Uzbekistan's only current oil export option is to reverse an existing crude oil pipeline that brings oil from Omsk, Russia, to Uzbek refineries. Uzbekistan has signed a memorandum of understanding with Turkmenistan, Afghanistan, and Pakistan to build the Central Asia Oil Pipeline (CAOP), which, if constructed, would transport Uzbek and Turkmen oil via Afghanistan to a proposed new deepwater port at Gwadar on Pakistan's Arabian Sea coast. Continuing unrest in Afghanistan has stalled any progress on the CAOP, and the relatively small volumes of Uzbek oil that will be available for export over the next 10-20 years are insufficient to support the construction of a new export pipeline without additional volumes from other Central Asian countries.

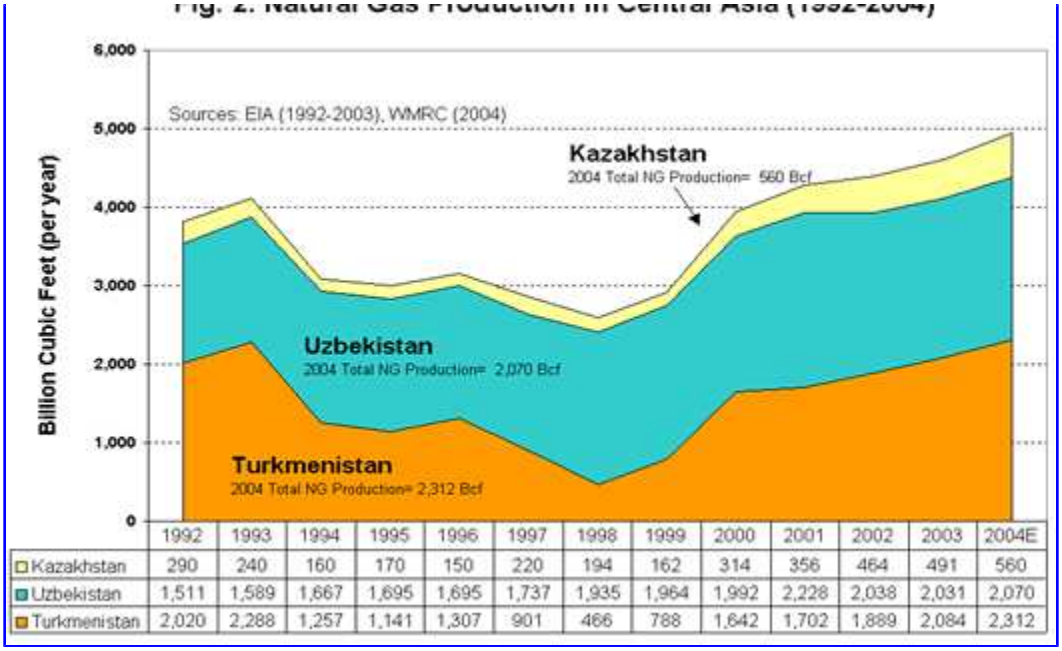
Natural Gas

Turkmenistan and Uzbekistan contain large amounts of natural gas reserves but are constrained by the lack of natural gas transport infrastructure. For more information on Kazakhstan, please see the Kazakhstan Country Analysis Brief.

Turkmenistan

Since independence, regional natural gas production has been characterized by modest annual increases from Uzbekistan, and by a dramatic collapse (then partial recovery) from Turkmenistan (see Fig. 2 below). These fluctuations occurred because, after 1991, natural gas from the Caspian Sea region, mostly from Turkmenistan, became a competitor with Gazprom, the Russian state natural gas company. Since all of the pipelines connecting the region to world markets were owned by Gazprom and routed through Russia, Turkmen natural gas was squeezed out of the market. As a result, Turkmenistan's incentives for increasing its production of natural gas disappeared. The country's output dropped throughout the 1990s, plummeting from 2.02 Tcf in 1992 to just 466 billion cubic feet (Bcf) in 1998 when the country was locked in a pricing dispute with Russia over the export of its natural gas. In 1999, a Turkmen-Russian agreement took hold, and in 2000, production skyrocketed to 1.64 Tcf before reaching 2.0 Tcf in 2004.

Fig. 2: Natural Gas Production in Central Asia (1992-2004)



	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004E
Kazakhstan	290	240	160	170	150	220	194	162	314	356	464	491	560
Uzbekistan	1,511	1,589	1,667	1,695	1,695	1,737	1,935	1,964	1,992	2,228	2,038	2,031	2,070
Turkmenistan	2,020	2,288	1,257	1,141	1,307	901	466	788	1,642	1,702	1,889	2,084	2,312

Turkmenistan has proven natural gas reserves of approximately 71 Tcf according to the *Oil and Gas Journal*. That reserve level ranks Turkmenistan among the top 15 countries in terms of natural gas reserves. Turkmenistan contains several of the world's largest gas fields. These include Dauletabad, which held about 60 tcf of gas before being brought into production in 1982, and Shatlyk, which held 33 tcf of gas reserves before coming onstream in the early 1970s. All major gas fields in Turkmenistan have been producing for more than a quarter century, and therefore exhibit sign of natural depletion.

The Dauletabad field has been cited as a possible supply source for a Trans-Afghan Pipeline. In 1997, reserves at the field were independently certified at an estimated 25 trillion cubic feet by the U.S.-based consultancy, DeGolyer and McNaughton. In 2005, this same firm was hired by the Asian Development Bank (ADB) to re-assess the field's reserves and its ability to support the pipeline project. The results have not be released publicly, but a senior ADB official has been quoted in industry press as stating that the field's production forecasts "are lower than anticipated" and that "production is predicted to decline." The ADB official added that "they will need to find gas from other fields will be needed to meet pipeline design targets."

Uzbekistan

With estimated natural gas reserves of 66.2 trillion cubic feet (Tcf), Uzbekistan is the second largest natural gas producer in the Commonwealth of Independent States (after Russia) and one of the top ten natural gas-producing countries in the world. Uzbekistan produces natural gas from 52 fields in the country, with 12 major deposits--including Shurtan, Gazli, Pamuk, Khauzak--accounting for over 95 percent of Uzbekistan's natural gas production. These deposits are concentrated in two general areas: the Amu Dar'ya Basin and in the Mubarek area of the southwest part of the country.

Since becoming independent, Uzbekistan has increased its natural gas production by over 30 percent, from 1.51 Tcf in 1992 to 2.03 Tcf in 2003. According to preliminary 2004 data, Uzbek natural gas production increased to 2.07 Tcf for the year. Uzbekistan is the second largest natural gas producer in the CIS (after Russia). However, Uzbekistan's natural gas fields were heavily exploited in the 1960's and 1970's by the Soviet Union, and as a result several older fields, such as Uchkyr and Yangikazgan, are beginning to decline in production. In order to offset those declines, Uzbekistan is speeding up development at existing fields, such as Garbi and Shurtan, as well as developing new fields and exploring for new reserves.

In April 2001, Uzbekneftegaz signed its first Production Sharing Agreement (PSA) with Britain's Trinity Energy (through a specially formed subsidiary known as UzPEC Ltd). The $400 million project entails the development of fields in Uzbekistan's central Ustyurt and Southwest Gissar regions, and the partners expected to have annual natural gas production of roughly 71 billion cubic feet by 2006. However, Uzbekneftegaz broke off the PSA in February 2005, alleging that UzPEC had not met conditions specified in the PSA. At first both parties resolved to settle their dispute at the international arbitration court, but Uzbekneftegaz's CEO announced in June that they would resolve their conflict outside of the court. The Southwest Gissar field produced about 800 bbl/d of oil in 2002 and 2003 before Uzbekistan closed it down in August 2004.

Gazprom has been getting more involved in revamping old fields in Uzbekistan and Uzbekneftegaz signed a natural gas supply deal with the company that will supply as much as 350 bcf per year to Russia by 2006. During 2005, Gazprom (Russia) announced that it will start developing a $1.2 billion gas field in the Ustyurt region in Uzbekistan this year and plans to spend $1.5 billion to modernize natural gas pipelines in Central Asian states to boost natural gas exports from the region. The field in the Ustyurt region will be developed jointly with Uzbekneftegaz. The companies will pump between 280 and 350 billion cubic feet of gas per year from the fields. In addition to field exploration and development, Gazprom is also working on a $1.5 billion project to increase natural gas exports from Turkmenistan and Kazakhstan to Europe. Lukoil, another Russian energy company, signed a 35 year, $1 billion PSA with Uzbekneftegas in June 2004 to develop the Kandym natural gas deposits, which are estimated to hold roughly 7 Tcf of natural gas. The company hopes to begin producing around 210 Bcf per year beginning in 2011.

Natural Gas Transport

Central Asia's main pipeline is the Central Asia-Center pipeline, but major proposals to export the regions natural gas south and west have been delayed.

In addition to Gazprom's $1.5 billion pledge to develop natural gas infrastructure in Central Asia, China has also pledged a smaller $35 million loan to develop infrastructure in Uzbekistan. Uzbekistan exported approximately 460 Bcf during 2004, up roughly 63 percent from 2003. Uzbekistan sends most of its natural gas exports to Russia and less than 35 Bcf to Kazakhstan. Uzbekistan also exports natural gas to Kyrgyzstan, Tajikistan, and Ukraine. Uzbekistan is a transit point for Turkmenistan's gas exports to Russia, which are pumped through Kazakhstan. The gas enters the Russian territory at the Alexandrov Gay point, the key to the Central Asia-Central Russia line.

In April 2003 Turkmenistan signed new agreements with Uzbekistan and Russia to increase exports to both countries substantially over the next 25 years. After a pricing dispute which halted Turkmenistan's natural gas exports in late 2004, Turkmenistan re-negotiated the quantities and prices of its natural gas exports to Russia and to Ukraine. Turkmenistan's January 2005 agreement with Russia guarantees initial natural gas exports of 212 bcf in 2005, drastically increasing to 2.4 Tcf in 2007, and remaining at 2.8 Tcf from 2009-2028. Also, Turkmenistan is supplying Ukraine with up to 1.1 Tcf for the remainder of 2005 and will provide 1.2 Tcf in 2006. Turkmenistan also agreed to decrease the price over 24 percent from the previous price of $2.05 per thousand cubic feet.

Central Asia's main natural gas export, the Central Asia-Center pipeline, already is routed into the Russian natural gas pipeline system, as is the Bukhara-Urals pipeline. In an effort to diversify export routes, a number of natural gas pipelines originating in Central Asia are under consideration. A proposed Trans-Afghan pipeline is under consideration to export Central Asian natural gas via Afghanistan to Pakistan. Central Asia also has a number of internal pipelines, including the Tashkent-Bishkek-Almaty pipeline, to serve natural gas customers in the region.

Central Asia Center Pipeline

The Central Asia-Center pipeline, built in 1974, has two branches. The western branch delivers Turkmen natural gas from near the Caspian Sea region to the north, while the eastern branch pipes natural gas from eastern Turkmenistan and southern Uzbekistan in a northwest direction across Uzbekistan. The pipeline branches meet in western Kazakhstan, where they run further directly north and enter the Russian natural gas pipeline system. Turkmenistan has been the chief exporter of natural gas via the Central Asia-Center pipeline, which has a 3.53-Tcf combined capacity.

Over 90 percent of Turkmenistan's natural gas exports via the pipeline go through the eastern branch, since the majority of Turkmen natural gas production is in the eastern part of the country, and also because the western branch of the pipeline is in poor technical condition. In 2001, Turkmenistan had planned to export 1.41 Tcf of natural gas via the Central Asia-Center pipeline, including 1.06 Tcf to Ukraine and another 353 Bcf to Russia. However, Turkmenistan exported only about 1.16 Tcf via this route, which Turkmen officials attributed to the limited capacity of the Kazakh segment of the pipeline.

Turkmenistan has sought to reconstruct compressor plants and pipeline sections of the western branch that are on its territory, but Turkmen President Saparmurat Niyazov has complained that sections of the pipeline that are in Uzbekistan and Kazakhstan are obsolete and require modernization. According to Turkmenistan, capacity on the Central Asia-Center pipeline is only about 2.4-2.5 Tcf presently due to a lack of maintenance and repair. Turkmenistan has stated that this is restraining its export capacity to the north, since the country could increase its natural gas production if the pipeline's capacity were increased. In 2002, Turkmenistan is planning to export 1.77 Tcf of natural gas via the Central Asia-Center pipeline, with 1.41 Tcf to be piped via Russia to Ukraine.

Korpezhe-Kurt Kui Pipeline

This 120-mile pipeline was built in 1997 and was the first non-Russian natural gas pipeline from the Newly Independent States. With a capacity of almost 300 Bcf per year, Turkmenistan has been able to supply Iran with roughly 180 Bcf of natural gas per year. In September 2005, Turkmenistan

installed a new $140 million gas processor to facilitate higher natural gas flows to Iran. During 2005, Turkmenistan is expected to export around 250 Bcf to Iran.

Turkmenistan-Afghanistan-Pakistan (TAP) Pipeline (also called Trans-Afghan Pipeline)
Until recently, the TAP proposal was considered effectively dead, but with a fragile peace in Afghanistan established and the Taliban removed from power, the idea of a trans-Afghan pipeline has been revived. India has officially agreed to take part in a $3.3 billion natural gas pipeline project from Turkmenistan via Afghanistan and Pakistan. The TAP pipeline would span over 1,000 miles to the south from a point in Turkmenistan to Fazilka (India) on the Pakistan-India border. A feasibility study, commissioned by the Asian Development Bank was completed in 2005. The pipeline would have a rated capacity of 1.1 bcf per year.

Under the original plans, the pipeline would run 900 miles from the Turkmen natural gas deposit at Dauletabad through Kandahar, Afghanistan, and terminate in the Pakistani city of Multan. Uzbekistan also signed a memorandum of understanding with Turkmenistan, Afghanistan, and Pakistan to participate in the Centgas pipeline project. A 460-mile stretch of the pipeline, which would have a capacity of between 706 Bcf and 1.06 Tcf, would cross Afghan territory. Approximately 12 percent of the pipeline's capacity would be reserved for Afghan natural gas.

Tashkent-Bishkek-Almaty Pipeline
Uzbekistan's main natural gas export pipeline has been the Tashkent-Bishkek-Almaty pipeline which runs through northern Kyrgyzstan to southern Kazakhstan. The pipeline is the main source of natural gas for Kyrgyzstan and southern Kazakhstan. Irregular supplies from Uzbekistan, illegal tapping of the pipeline by Kyrgyzstan, and mounting debts by both Kazakhstan and Kyrgyzstan for supplies already received have led to increased tension between the three neighbors in the past. However in 2005, Kyrgyzstan and Uzbekistan solved their dispute and now Kyrgzgaz (the Kyrgyz natural gas company) will pay cash for the natural gas instead of electricity and water supplies. The non-cash terms of the previous agreement complicated relations between the two states resulting in Uzbekistan cutting off natural gas supplies to Kyrgyzstan in 2004 and 2005. Kyrgyzgaz will receive 12.4 Bcf from Uzbekistan this year, on the condition that supplies are paid 100 percent in advance.

Links

EIA Links

EIA: Country Information on Azerbaijan
EIA: Environmental Brief on the Caspian Sea Region (Feb. 2003)
EIA: Country Information on Iran
EIA: Country Information on Kazakhstan
EIA: Country Information on Russia
Oil and Gas Resources of the Ferghana Basin-EIA

U.S. Government

U.S. Agency for International Development
U.S. Department of Commerce, Business Information Service for the Newly Independent States (BISNIS)
U.S. Department of Commerce, Country Commercial Guides
U.S. Department of State – Turkmenistan
U.S. Department of State - Uzbekistan
Radio Free Europe/Radio Liberty (RFE/RL)
U.S. Embassy in Turkmenistan
U.S. Embassy, Baku
U.S. Embassy, Almaty, Kazakhstan

General Information

Asian Development Bank
Eurasianet.org
IMF report on Uzbekistan (7/05)

Sources

Eurasianet
The World Bank
IMF
FSU Oil and Gas Monitor
Nefte Compass
Caspian Petroleum Investor
International Oil Daily
Global Insight/World Markets Research Centre.

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